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# Library Web Portal for Academic Libraries in India: A Case Study

Rajesh Das
*The University of Burdwan*, rajeshdas99@gmail.com

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Dr. Rajesh Das
Assistant Professor, The University of Burdwan
Burdwan, PIN-713104, West Bengal, India

**Abstract**

This paper is focused on library web portal for online information services. The library web portal contains the different types of web based services. The library information professionals and researchers are taking interest to use of library web portal as a central component of their integrated online library information system constructions. In this regard, the FOSS-based library web portal has drawn a considerable attention amongst library and information professionals and researchers in the field of integrated online library and information services through internet. There is a need of library web portal which is easy to design, implement and maintain by the library and information professionals. It also discussed the FOSS based architecture like LAMP and others advanced Web 2.0 based tools.

**Keywords:** Web Portal, Library Portal, Library Web Portal, FOSS, Free Software, Open Source Software.

## 1. Introduction

Libraries as well as information centers are not exceptional case from the web revolution. They developed their own portals for their users/clients rather than searching information and wasting valuable time of their users going in depths as well as vastness of the web world.

Library needs a portal because it should make every user more efficient and more effective. Portals deliver to every user, in a few clicks, all of the electronic information and services they commonly use in the way they work best. Homepages, by contrast, give users general information, most of which no one ever wants.

Most portal users want library information, such as the catalog, access to electronic journals and licensed databases, the books they need to return, library floor plans, e-reserves, and maybe even lists of new acquisitions that match their profile.

The library information professionals and researchers are taking interest to use of library web portal as a central component of their integrated online library information system constructions. In this regard, the FOSS-based library web portal has drawn a considerable attention amongst library and information professionals and researchers in the field of integrated online library and information services through internet. There is a need of library web portal which is easy to design, implement and maintain by the library and information professionals.

It is very cost effective to build a Library Web Portal by using proprietary / commercial software of the libraries. Library needs to identify ideal software for building web portal for long term basis with in a limited fund. It is require for designing an effective and efficient web portal integrating all kinds of library key services by using free & open source software and tools in a single platform and architecture.

Following research questions have been drawn while the problem found:

1. Is any need of Library Web Portal for online library services?

2. What are Library key services?

3. Is it possible to make a low cost Library Web Portal by using Free and Open source software?

4. Technologies used in a single platform.

Users find it difficult to locate the most appropriate database or resource to search for information relevant to their need. If information is difficult to find using library tools and services, users are looking for alternative sources. Other-hand, it is difficult to manage the databases, resources and services with the various software in different architecture and platform through the library websites or portals for the librarian and library and information professionals. It is also cost effective, if the system is built with the commercials and proprietary software. Therefore, this research which explores the advantages of such technology will help to design and implement the library web portal by using FOSS-based architecture in a single platform and architecture.

## 2. Literature Review

**Letha(2006)** highlights the role of a library portal for various user services. In the modern digital information environment, a well-defined mechanism is needed to organize, store, and access information. **Rajashekara & Gireesh (2010)** discuses basics of blogs, like history, types, features and limitations. And also it explains how it's useful for librarians. Few samples of Library blogs are presented and explained to highlight the importance of blogs in libraries. **Kamble, Raj & Sangeeta (2012)** discusses in brief about the feature of some of the open source library management software like Greenstone

Digital Library, DSpace, Koha, E-Prints, NewGenlib, Php MyLibrary, OpenBiblio, Avanti, etc., which are useful for developing digital library and institutional repositories. Authors highlights Open source library management software is a solution to reducing that cost. **Deka & Deka (2012**)have discuss that, In the web 2.0 environments, Tagging and social bookmarking play a major role in knowledge organization and management in the field of library services. Bookmarking tools like delicious, twitter, flickr, connotea, etc are very popular and useful regarding the use of internet and web resources in a systematic and scientific way. **Amin & Navik (2013)** share experience with open source CMS Joomla used at Vikram Sarabhai Library, Indian Institute of Management Ahmedabad. so that remaining libraries and information centers can more easily assess its appropriateness to their own environment. **Mehta & Bhat (2014)** have tried to find out on their article the impact of OSSs and how they are driving the transformation of Indian libraries. OSSs have also made library experience more interesting by facilitating self uploading/downloading of documents and user interaction online. **Kirtania, Sarkar & Chatterjee (2015)** has described on their article about two open source content management software i.e. Joomla and Drupal with their technical requirements, features, functions, service, importance etc. They said that at present open source is a popular choice in the field of Library and Information science

## 3. Library Web Portal

A portal is a website or web service that provides information content to serve a specific community. It is derived from the Medieval Latin word 'portale', meaning 'city gate'. American Heritage Dictionary defines a portal as "a doorway or an entrance, or a gate, especially one that is large and imposing". Library portals typically provide a gateway to an institution's resources by listing them for users and creating a direct link to the interface of each resource. Library portals in this digital era enhance the value and function of electronic resources with the facility of searching multiple resources. **(Barman, 2014)**

The idea of a library portal is misdirected. While it is vital that libraries have a presence on university enterprise portals, libraries should build portal pages, portal channels, and portal cameos rather than entire library portals.

There is no single model for what constitutes a portal, all portals offer at least five core features:

- Web searching
- news
- reference tools
- access to online shopping venues and
- some communication capabilities (i.e. email, chats)

Library portal reduce the barrier of users having to remember multiple log-ons. The portal gives the library a tool to channel users towards preferred resources. It supports searching by carrying users through from bibliographic searches to full text options.

## 3.1 Elements of Library Web Portal

The library portals are changing rapidly, but some of the major elements to be considered while designing the library portal are as following:

1. Intuitive and customizable web interface
2. Search interface
3. Resource linking
4. User authentication
5. Security
6. Personalized content presentation
7. Interactive services
8. Contents of library web portal

## 3.2 Objectives of library web portal

The main objectives of a library web portal (Letha, 2006):

- To provide a configurable and integrated interface to multiple resources
- To search across multiple databases
- To search across different metadata schemes, and other formats such as MARC, Dublin Core, and deliver results in acceptable response times
- To search across different formats of material, such as bibliographic records, full text, graphics and multimedia files and objects .
- To provide navigation and linking among resources
- To provide full and integrated management information and usage statistics

## 3.3 Core functionality of library web portal

- If the library contains the consisted and organized resources, then searching would be far easier for the users.

- User should be able to search for suitable resources to interrogate, using in depth collection level descriptions.

- It would be more effectively to the users, if there was one fully functional library maintained search interface available for any database.

- It would often be convenient to search multiple databases from one search box.

- The search results should be presented in a way familiar from search engines.

- The user should have the option to revert to the database's native search interface if this offers greater functionality.

  The details study of existing library web portal and library websites are discussed in "Methodology".

## 4. Free/Open Source Software (FOSS) for building Library Web Portal

The term "Free software" is meant that "the software is available freely" and the term open source software (OSS) has been defined to include "software which is available to the public in source code form, and which limit use modification or redistribution" (**Madhavan, 2003**). There are various licensing models to which the OSS label has been applied, but the basic idea is that the software's "license may not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs" and the working software must either be distributed along with its source code or have a "well publicized means of downloading the source code, without charge via the internet."

The main reason of this is the choice of freedom. If a user encounters a bug or face a problem, he/she can fix the error without relying on the vendor, which is time consuming and frustrating. Also the users have options to modify and make improvement in the programs as per the need with the help of available source code. There is scope to use the talent of user and customize the software as per requirement.

### 4.1 Features of FOSS

- One of the main attractive features of FOSS is that its source code is available.

- It is possible to customize a particular software application according to local needs.

- Have the software at their disposal to fit it to their needs. Of course, this includes improving it, fixing its bugs, augmenting its functionality, and studying its operation.

- Redistribute the software to other users, who could themselves use it according to their own needs. This redistribution can be done for free, or at a charge, not fixed beforehand.

## 4.2 Need of Open Source Software in Libraries

- Code of software is open to modify, improve, and redistribute
- Mature software
- Libraries outlive the any software producer or vendor
- No dependence on vendor or producer
- It is more reliable
- Perform better and Reduce Cost
- Use without restriction

## 4.3 Use of FOSS in library and information domain

FOSS is rapidly gaining attention of LIS Professional community. For this reason, FOSS can be a great alternative to the costly proprietary software for libraries. In the developing countries, libraries are able to support automated libraries, digital libraries, electronic resource access, because they are able and well equipped to use FOSS.

### 4.3.1 Integrated Library Management Software

An integrated library system (ILS), also known as a library management system (LMS) is an enterprise resource planning system for a library, used to track items owned, orders made, bills paid, and patrons who have borrowed usually comprises relational database with common modules like acquisition, cataloguing, circulation, serials OPAC, etc. The some popular open source library management software are – Koha (http://koha-community.org), NewGenLib(http:// www.verussolutions.biz), etc.

### 4.3.2 Content Management System

A content management system is used to manage the content of a website is the fastest way to keep one's website content updated. The some popular CMS software are Joomla

(http://www.joomla.org), Drupal (http://www.drupal.org), Wordpress (http://www.wordpress.org), etc.

### 4.3.3 Institutional Digital Repository Software

An institutional repository (IR) is an online locus for collecting, preserving, and disseminating - in digital form - the intellectual output of an institution, particularly a research institution. The some popular digital IR are DSpace (http://www.dspace.org), Greenstone (http:// www.greenstone.org), Eprints (http://www.eprints.org), Fedora (http:// fedorarepository.org/), etc.

### 4.3.4 OAI-PMH (Open Archive Initiative- Persistent for Metadata Harvesting) Software

The Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) is a protocol developed for harvesting (or collecting) metadata descriptions of records in an archive so that services can be built using metadata from many archives. Some OAI-PMH software are - OAIHarvester (http://www.oclc.org/research/software/oai/harvester.htm), Arc (http://arc.cs.odu.edu/), DLESE OAI Software (http://dlese.org/oai/index.jsp), OAICAT (http://www.oclc.org/research/software/oai/cat.htm), etc.

### 4.3.5 Advanced Tools Software for Library Domain

### 4.3.5.1 Resource Discovery Tools

We use the term Resource Discovery to mean the process of identifying and accessing information relevant to learning, though identification (discovery) and access are best considered as separate processes. It is a basic requirement in all tiers of education, whether or not it involves electronic means (using computers, and more particularly the internet), though that is our focus. Students doing project work, teachers preparing lesson plans and technologists advising academic staff all depend on the existing knowledge base in developing their learning and teaching. We would contend that this is true even where teaching and learning is tightly associated with a particular (already wellresourced) curriculum or is more vocational in nature. There is no single resource or source of information which would meet the diverse educational

needs of all learners, and one best develops an understanding of any particular subject when it is considered from different viewpoints. VuFind (http://www.vufind.org) is a library resource portal designed and developed for libraries .The goal of VuFind allows users to search and browse beyond the resources of a traditional OPAC.

### 4.3.5.2 Learning Management Software

A learning management system (LMS) is a software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. The Advanced Distance Learning group, sponsored by the United States Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems. Some learning management software are – Atutor, EFront, Dokeos etc.

### 4.3.5.3 Blogging Software

A web log sometimes written as a web log or weblog is a website that consists of a series of entries arranged in reverse chronological order often updated on frequently with new information about particular topics. Some popular blog software are – Blogger, Wordpress, LiveJournal etc.

## 4.4 Open Platform / Architecture

Libraries of higher academic institute can prefer LAMP architecture for building web portal. At present the most web 2.0 technology based software are coming within the LAMP architecture and they are compatible for implementing in this architecture.

### 4.4.1 LAMP Components

LAMP component includes: an operating system – Linux, a web server – Apache, a database – MySQL and a programming language – PHP / Perl / Python.

**Linux:** An open source operating system that is based on UNIX and runs on a wide variety of hardware.

**Apache:** A web server that is compatible with various operating systems such as Linux, UNIX, Windows, and Mac OS X etc. The Apache web server can be used to serve both static as well as dynamic web pages.

**MySQL:** MySQL is one of the most popular open source relational database management systems that use SQL to process data in a database.

**PHP / Perl / Python:** PHP is an open source server side scripting language that can be used to develop a whole range of dynamic web applications.

## 4.5 Web 2.0 Tools For Building Web Portal

The term 'Web 2.0' was coined by technology commentator Tim O'Reilly who tried to define it as follows: "Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an 'architecture of participation' and going beyond the page metaphor of Web 1.0 to deliver rich user experiences" **(O'Reilly, 2005)**

### 4.5.1 Features of Web 2.0

Web 2.0 websites typically include some of the following features/techniques:

**Search**: The ease of finding information through keyword search which makes the platform valuable.

**Links**: guides to important pieces of information. The best pages are the most frequently linked to.

**Authoring**: The ability to create constantly updating content over a platform that is shifted from being the creation of a few to being the constantly updated, interlinked work.

**Tags**: Categorization of content by creating tags that are simple, one-word descriptions to facilitate searching and avoid rigid, pre-made categories.

**Extensions**: Automation of some of the work and pattern matching by using algorithms e.g. amazon.com recommendations.

**Signals:** The use of RSS (Really Simple Syndication) technology to notify users with any changes of the content by sending e-mails to them."

## 4.5.2 Web 2.0 tools and its implementation for the libraries

Web 2.0 encompasses several technologies and services, they are:

**4.5.2.1 Blogs:** A blog is a website where library users can enter their thoughts, ideas, suggestions, and comments. Blogs entries known as blog posts are made in journal style and are usually displayed in reverse chronological order; A blog entry might contain text, images or links to other blogs and web pages.

**Applications**

- Blogs can be used tools for marketing of the information as well as the library,
- Can be used as tool for posting Minutes of the Meetings for necessary actions,
- Blogs can serve as discussion forum.

**4.5.2.2 Wikis:** A wiki is a webpage or set of Web Pages that can be easily edited by anyone who is allowed access. Wikis are typically powered by wiki software and are often created collaboratively, by multiple users. Wikis are easy-to-create, editable web pages that allow multiple individuals—if granted permission by the wiki owner—to edit the content. Wiki is one of the best tools where people can share ideas with one another, and librarians can use this to replicate the successes of other libraries.

**Applications**

- Reference resources wiki can be built.
- Wikis can be used for creating subject guides, subject gateways
- Wikis can be used for social interaction and discussions among the librarians & users as well as.

## 4.5.2.3 Really Simple Syndication (RSS)

RSS is an acronym for Really Simple Syndication and Rich Site Summary. RSS is an XML-based (extensible Markup Language) format for content distribution. RSS is a defined standard based on XML with the specific purpose of delivering updates to web-based content. RSS is a convenient way to keep the library users up-to-date with new content on the library website.

**Applications**

- SDI & CAS Services
- Bibliographic Service
- Bulletin Board Service
- Announcement of the availability of new books and other resources in a given subject area.

## 4.5.2.4 Instant Messaging (IM)

IM is a form of real time communication between two or more people based on typed text, images etc. IM has become increasingly popular due to its quick response time, its ease of use, and possibility of multitasking. Libraries are already offering live reference service using IMs 24x7x365 in a collaborative fashion.

**Applications**

- Instant clarifications for the Questions from users and vice versa.
- Online meetings
- For providing virtual reference services.

**4.5.2.5 Social Networking site:** Social networks are built upon a hypothesis that there exists a determinable networking structure of how people know each other. MySpace, FaceBook, Del.icio.us, Frappr, and Flickr are some of the social networking services that are very popular. Facebook allows individual librarians to create profiles. Flickr, the popular photo sharing site, to provide new avenues to the library's photos and build new levels of interaction with the public.

**Application:**

- Libraries can create a page to reach to new users
- Social networking could enable librarians and patrons not only to interact, but to share and change resources dynamically in an electronic medium.
- For building network among the interested group in discussing the common interest

## 5. Methodology

This primary element of the methodology includes the collection of required secondary data by adopting the desk study technique. For the collection of secondary data. Information has been collected from published books, journals and web resources. Primary element of this methodology includes the following steps:-

## 5.1 Selection of Library Portal

All higher academic library portals are not providing online information, that's why selection of library portals is made on the basis of offering online services, information's and users requirements.

## 5.2 Study of different library web portals / library websites

Before giving an idea of designing a library web portal, it needs to study the existing library web portal or library websites. The study could help for choosing the library key services, selecting the software, selecting the platform and architecture etc.
Few numbers of existing library web portals / websites on national level and few numbers on state level are selected. The selections of library web portals / library websites have been made on the basis of simple random method.

## 5.2.1 National Level

**A. Visva-Bharati University, Santiniketan (http://14.139.211.2/library/index.php)**

Visva –Bharati University provide one central Library homepage and different Section's Library homepage. It provides various links such as "Institutional Repository", "e-content service", "Web OPAC". Visva-Bharati Library gives "RSS" link. Library Site provide "awareness services", "Reprographic Services", "Reference Services" ,"Inter Library Loan".

B. **Indian Institute Of Engineering Science and Technology, Shibpur (http://www.iiest.ac.in)**

Home page of Ramanujan Central Library Of Indian Institute Of Engineering Science and Technology ( IIEST), Shibpur give access to "WebOpac", "New additions", "Feedback" etc. Central Library is using Libsys Software. It provide link to"e-resources" ,"e-news". Central Library of IIEST, Shibpur help to access Full text databases.

C. **Indian Institute of Technology (IIT), Kharagpur (http://www.library.iitkgp.ernet.in)**

IIT Kharagpur library provides various online services like – general information of library, e-books service, e-journals service, full-text database service, bibliographic database service, online resources service, Web-OPAC service, Institutional repository service etc. The Libsys web-OPAC is used for online public access catalogue. The full-text PhD theses are also accessing through DSpace open source institutional repository software.

## 5.2.2 State Level

**A. Vidyasagar University, Midnapur (http ://www.vidyasagar.ac.in)**

The central library website of Vidyasagar University provides access to online catalogue (WEBOPAC),E-book, E-journals, E –references, Digital Institutional Repository, CD/DVD repository. It contains "Archival of PhD thesis and Dissertation", "Article Repository", "Current Awareness Services", "Question papers of VU Repository", "Convocation Addresses" and so on. Electronic services, such as "Multimedia Repository", "Cloud Sharing", "CD-DVD Mirror Server"are given by V.U.

**B. Jadavpur University (http://www.jaduniv.edu.in/#)**

Library of J.U now Using LibSys software for Library Automation. Remote Access of Digital Library Provide access to "e-resources" ,"Feedback". The Digital Library portal is the main web service. It contains "Archival of PhD thesis abstracts, "Current Awareness Services", "E-books", "E-journals and databases, "List of Reference websites", "Question papers of JU since 2005", and "Repository". The repository is made up by DSpace software. It give link to access resources from UGC-Infonet.

**C. Calcutta University, Kolkata (http://caluniv.ac.in)**

The main online services are like online catalogue (WEB-OPAC), E-Books (under TEQIP), E-Journals (Under UGC-INFONET), Online Journal Archive (Under TEQIP), Proquet etc. They have developed their own Web-OPAC and it contains the bibliographic information about books, PhD theses, medical dissertations, journal database etc. The website also provides subscribed database services like ProQuest, CSI publications, Cambridge e-books & e-collections, Sage journals online etc.

**D. National Institute of technology, Durgapur (**http://www.nitdgp.ac.in/library/**)**

NIT Durgapur provide various link such as, "home", "library e-resources", "about the library" etc. The book database is accessible through OPAC (Online Public Access Catalogue). It is also

a beneficiary Member of INDEST-AICTE Consortium. Library operations have been automated with the help of an integrated library software package, LIBSYS-4.

**E. Indian Institute of Science Education and Research (IISER), Kolkata (http://www.iiserkol.ac.in/facility/library)**

Library of IISER give a list of free journals/e-books and other resources useful for researchers. Library gives various publishers link to their website, such as MathSciNet, Web of Science, and JSTOR etc. It gives link to access "Book", "e-book", "Computer Games", "Movie", "DVD", "Serial".

**F. Indian Institute of Chemical Biology (IICB)** (http://www.iicb.res.in/library.html)

They give link to access "OPAC". They are using Libsys software. It provides various services by various links such as "Notice", "Feedback", "New addition". Library website gives link of "Resources", "Current Journals", "Services" etc.

**G. S. N. Bose National Centre for Basic Sciences, (SNBNCBS)Saltlake (http://newweb.bose.res.in/facilities/Library/)**

Library website gives link to access "Online Databases", "List of Journals", "Library Services", "Library Resources"," SNBNCBS Repository". Latest events and Announcement details are available on the library site.

### 5.2 Study of Free/Open Source Software

Software selection is an essential and an important task for building library portal. Different OSS that are rapidly used in library portal along with its tools and technology. Technological architecture is also mentioned in this work.

## 6. Data Analysis

Data analysis involves organization of data in a systematic manner. It is a complex job which consists of drawing conclusions from the data collected and analyzed.

Here a comparative statement has been drawn for finding out the different online library services of above mentions institutions.

The comparative statement has develop on the basis of some attributes "general information", "Web-OPAC" , "e-journals", "e-books access" , "bibliographic databases access", "full-text in house resource access through digital institutional repository / archives", "search interface of

databases”,” interactive services”, “archival facility”, ”Access thesis & dissertation”, ”Web technology”, “Using LAMP architecture”, “Library updates”, “News Link” etc.

A measurement has been made by providing no (1 & 0) to every values. From that comparative statement we found that there are 17 attributes and every institution got a measurement value.

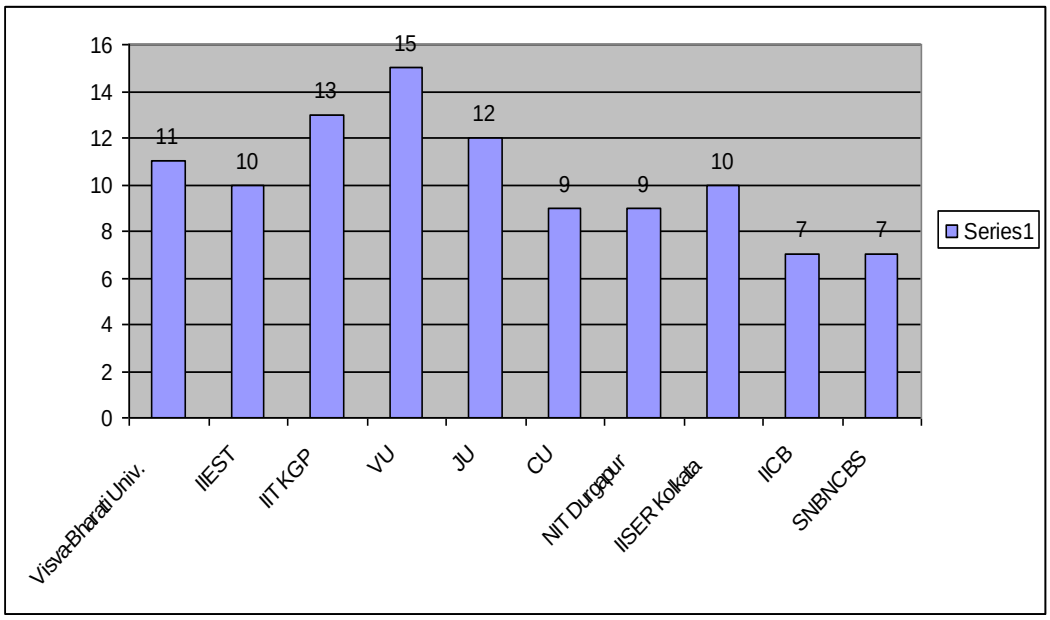


**Figure-1: Simple Bar Diagram showing the total values of online library services of different institutions**

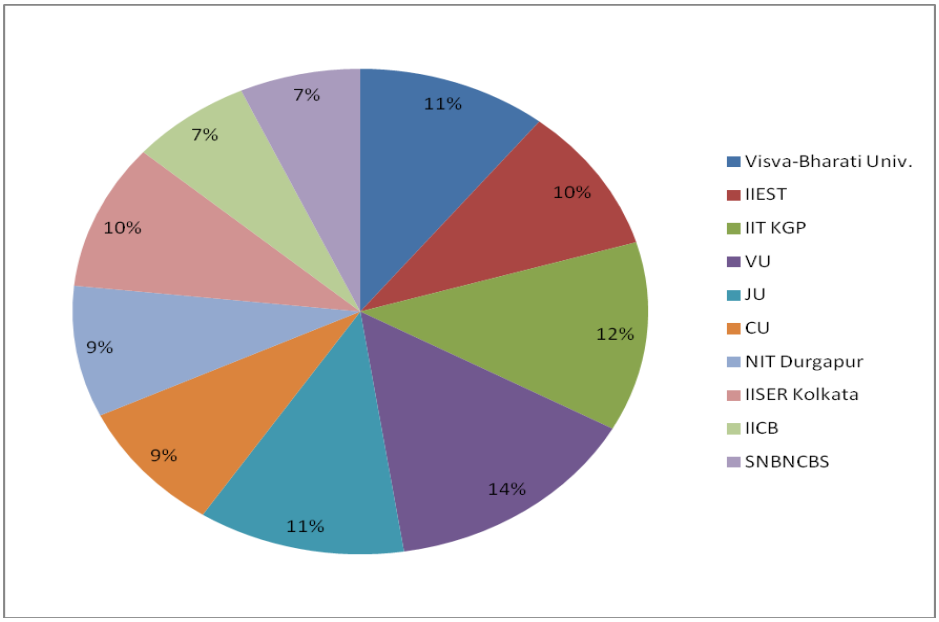


**Figure-2: Pie Diagram showing the total values and percentages of online library services of different institutions**

**Note:** **1**. V.B: Visva Bharati University, **2**. IIEST: Indian Institute Of Engineering Science and Technology, **3.** IIT KGP: Indian Institute of Technology, Kharagpur, **4**. V.U: Vidyasagar University, **5**. J.U: Jadavpur University, **6**. C.U: Calcutta University, **7**. NIT Durgapur: National Institute of technology, Durgapur, 8. IISER Kolkata: Indian Institute of Science Education and Research (IISER), Kolkata**, 9**. IICB: Indian Institute of Chemical Biology, **10.** SNBNCBS: S. N. Bose National Centre for Basic Sciences.

We also could see that the Vidyasagar University (V.U) has achive 14% and Indian Institute of Chemical Biology **(**IICB), S. N. Bose National Centre for Basic Sciences (SNBNCBS) has achived 7% each of total percentages of library services. There is an essential property of any portal that it must contain a single or multiple search interface(s) for the databases. We could see that most of libraries are national level are not providing this. At national level, most of libraries are using HTML for static pages and PHP for server side scripting languages; and Apache as web server.

Few libraries at national level are providing interactive service. But from above discussion, we did not find any library that supports all attributes. They are providing all library key services but they are not using fully FOSS-based architecture / platform. Most of them are using mixed or multiple architecture or platform. we may conclude that it is in need to design and implement an effective and efficient web portal integrating all kinds of library key services by using open source software and tools in a single platform and architecture for online information services.

## 7. Findings and Conclusions

In both, national and state level, there are ten numbers of library web portals / websites that has been studied on the basis of some attributes. We need a web based system in which all services are integrated for providing the online information to the users from a single access point. To develop a library portal system, we have to keep in our mind those things like searching, browsing, and accessing the relevant documents at the point of users.

Few findings are drawn from above discussion, they are:

1. Academic libraries are chosen as a possible application domain to set the scope of study and implementation of the library web portal system. We have tried to find out the key services that they are offering through their library portal.

2. After surveying these library portals it became easy to identify the tools through which they are offering their services.

3. The concept of free and open source software and tools are discussed in this study.We have tried to find out most and popular FOSS in library domain and tool software for developing the web based system.

4. We have tried to present a comparison among sample libraries, so that I can easily recognize what kind of services, which library is offering.
5. Academic libraries can develop web portal system by the LAMP (Linux Apache MySQL PHP/Perl) architecture. The modules of Linux, Apache, MySQL, PHP/Perl are interlinked, inter-configured and easy for additional configuration.

**From these above mention findings we can draw the following conclusions**:-

1. This study presents a new idea for designing and implementing a library web portal system by using free and open source software and tools in a single open architecture for providing online library information services.

2. LAMP architecture is a most popular architecture which is widely used for web applications.
   LAMP architecture is suitable platform for librarians and information professionals to develop their library web portal for online library and information services.

3. The higher academic libraries like university libraries, college libraries, and special libraries are growing with the electronic resources and collections.

4. This work helps the scholars, librarians, library professionals, information professionals, information scientist for research and development in the field of library and information science.

5. This research will help them how to design and implement a library web portal by using free and open source software and tools in a single architecture and platform.

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